

Amendment and Response

Applicant: Cory Watkins et al.

Serial No.: 10/073,656

Filing Date: February 11, 2002

Docket: 1552 – CA2

Title: CONFOCAL 3D INSPECTION SYSTEM AND PROCESS

REMARKS

This Amendment is responsive to the Office Action mailed December 16, 2003. In that Office Action, the Examiner rejected claims 2-4 under 35 U.S.C. §102(b) as being anticipated by Kerstens et al., U.S. Patent No. 5,248,876 (“Kerstens”); claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Kerstens in view of Lam, U.S. Patent No. 5,408,294 (“Lam”).

With this Response, claims 6-10 have been added and are presented for consideration. Claims 2-5 remain pending in the application and are presented for reconsideration and allowance.

Double Patenting Rejections under 37 C.F.R. 1.78(b)

The Examiner indicates that claims 2-5 of the instant application conflict with claims 2-5 of Application No. 10/073,613. It is believed that subsequent prosecution of the instant Application and U.S. Application No. 10/073,613 will alleviate any defect under 37 C.F.R. 1.78(b).

Claim Rejections under 35 U.S.C. §102

The Examiner rejected claims 2-4 under 35 U.S.C. § 102(b) as being anticipated by Kerstens et al., U.S. Patent No. 5,248,846 (“Kerstens”).

Claim 2 relates, in part, to a process of inspecting a surface, including bumps thereon, comprising determining an elevation of a surface using a Gaussian curve based upon light intensities measured at a first and a second elevation at each pixel viewed. For at least the reasons described below, Kerstens fails to teach or suggest such limitations.

The Gaussian curves 228, 226 shown in Fig. 7 of Kerstens are not based upon light intensities measured at a first and a second elevation. The Gaussian curves of Fig. 7 are a predetermined depth response characteristics, which “provide the relative intensity resulting from any surface within the ranges provided.” Column 7, lines 55-66 of Kerstens. In other words, Kerstens discloses a process whereby a light intensity is measured and then compared to a

Amendment and Response

Applicant: Cory Watkins et al.

Serial No.: 10/073,656

Filing Date: February 11, 2002

Docket: 1552 – CA2

Title: CONFOCAL 3D INSPECTION SYSTEM AND PROCESS

standard graph or table to determine the height of any surface. See column 8, lines 60-65 of Kerstens. Conversely, basing the Gaussian curve upon the measured light intensities of the first elevation and the second elevation includes fitting the Gaussian curve to the points (i.e., not comparing the points to an existing curve) to determine the actual wafer surface elevation at each location or pixel. See page 9, lines 1-29 of the Specification. At the very most, Kersten teaches the comparison of two intensity values to generate an intensity ratio which may be subsequently compared to a “look-up table” to determine a surface height. See column 9, lines 1-7 of Kerstens.

For at least the reasons above, Kerstens fails to teach or suggest the elements of claim 2. As claims 3-4 depend from claim 2, their rejection is traversed for reasons similar to those stated with respect to claim 2. Therefore, the Applicant respectfully requests that the rejection of claims 2-4 under 35 U.S.C. § 102(b) be withdrawn.

Claim Rejections under 35 U.S.C. §103

The Examiner rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Kerstens in view of U.S. Patent No. 5,408,294 (“Lam”). Claim 5 is a dependent claim, depending from independent claim 2. As previously discussed, it is believed that claim 2 is patentably distinguishable over the cited art. Therefore, all dependent claims are also patentably distinguishable over the cited art. In addition, dependent claim 5 is distinguishable over the cited art for additional reasons.

Claim 5 relates, in part, to the process of claim 2, wherein an inspection device is used to perform the scanning of claim 2 and includes a pellicle beamsplitter. For at least the reasons discussed below, such limitations are neither taught nor suggested by the cited references.

In particular, Kerstens specifically teaches away from the use of a pellicle beamsplitter. For instance, at column 12, lines 51-54 Kerstens specifically teaches the advantages of cementing pinhole mask 516, 518 and sensor array 540, 542 to beamsplitter cube 520, 522 to form an assembly for maintaining alignment. A similar configuration is taught at column 9, lines 39-45 of Kerstens; column 10, lines 34-45 of Kerstens; and column 15, lines 49-62 of Kerstens. Kersten discloses that this configuration is preferable as an assembly that is “very rigid and

Amendment and Response

Applicant: Cory Watkins et al.

Serial No.: 10/073,656

Filing Date: February 11, 2002

Docket: 1552 – CA2

Title: CONFOCAL 3D INSPECTION SYSTEM AND PROCESS

insensitive to temperature changes and mechanical disturbances” results from this cemented configuration. Thus, Kerstens teaches away from the use of a pellicle beamsplitter in lieu of the preferred cemented configuration utilizing the beamsplitter cube as disclosed. Therefore, as it is improper to combine references when they teach away from their combination, the cited references fail to teach or suggest the limitations of claim 5.

Newly Added claims 6-10

Newly added claims 6-10 are believed to be supported, for example, at page 9, lines 1-29 of the Specification. Claims 6-10 depend directly or indirectly from claim 2, which is believed to be allowable. Therefore, claims 6-10 are believed to present patentably distinct matter from the cited references. Their allowance is requested accordingly.

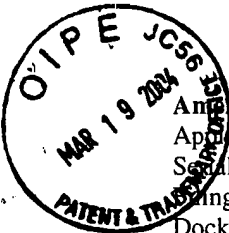
Allowable Subject Matter

In light of the above, Applicant believes independent claim 2 and the claims depending therefrom, are in condition for allowance.

CONCLUSION

It is believed that all claims are now in a condition for allowance. Allowance and notice to that effect is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.



Amendment and Response

Applicant: Cory Watkins et al.

Serial No.: 10/073,656

Filing Date: February 11, 2002

Docket: 1552 - CA2

Title: CONFOCAL 3D INSPECTION SYSTEM AND PROCESS

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this response.

Respectfully submitted,

Cory Watkins et al.,

By their attorneys,

DICKE, BILLIG & CZAJA, PLLC

Fifth Street Towers, Suite 2250

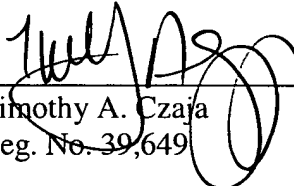
100 South Fifth Street

Minneapolis, MN 55402

Telephone: (612) 573-0178

Facsimile: (612) 573-2005

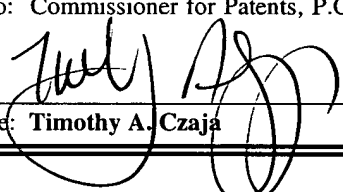
Date: March 16, 2004
TAC:jmc



Timothy A. Czaja
Reg. No. 39,649

CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 16th day of March, 2004.

By 

Name: Timothy A. Czaja